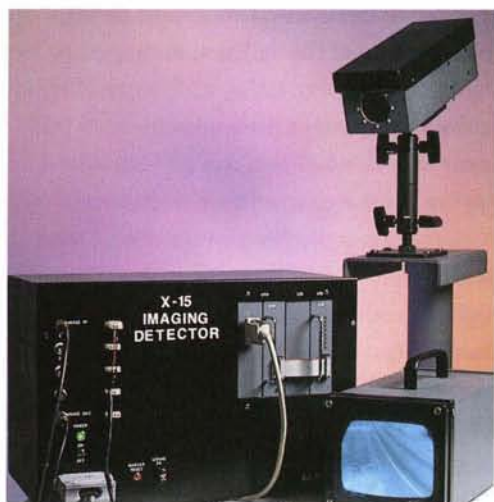


Traffic Monitor



Below is the Mestech X-15 "Eye in the Sky," a traffic monitoring system developed by Mestech Creation Corporation, Houston, Texas that incorporates NASA imaging and robotic vision technology. The system includes a camera, or "sensor box," mounted in a



weather resistant, temperature controlled housing; a portable monitor; and a controller cabinet containing a computer and test switches for on-site set-up and repair. **Below**, a Mestech engineer is conducting circuit board tests on an X-15 prior to shipping.

Marketed by SIDS, Tomball, Texas, the X-15 system employs up to four

imaging sensors that operate over a wide range of electromagnetic wavelengths and are designed to withstand bad weather, extremes of temperature and street vibrations. **At top right** is a closeup view of the sensor box, which has very low light capability along with high infrared and ultraviolet sensitivity, providing high accuracy for object identification in both high and low contrast lighting.

The key sensor technology was developed with the help of NASA information supplied by Jet Propulsion Laboratory (JPL). In

NASA Tech Briefs, a publication that lists NASA technologies available for transfer, a Mestech engineer read two articles of interest. One, on high resolution imaging spectrometry, described how a system aboard an imaging satellite separated more than 200 frequencies to form composite color images of Earth scenes. The other article dealt with technical details of robotic vision research.

Mestech requested and received from JPL Technical Support Packages, followup detailed information on each of the subjects described in *Tech Briefs*, and used this information in the company's development of the X-15 system.

A typical X-15 installation consists of a sensor box mounted on a ridge pole or other structure at a traffic intersection. The sensor detects vehicles approaching the intersection from either direction and sends the information to the local (at the intersection) computer, or controller cabinet, which controls the traffic light according to the traffic rate. The system can also send traffic information to a central or regional computer for control of a larger area.

At bottom right is a view of the screen detailing the four zones of interest of





NASA SENSOR TECHNOLOGY AIDED DEVELOPMENT
OF A GROUND TRAFFIC CONTROL SYSTEM

the monitoring camera. When a vehicle passes through these areas, the computer processes the sensor's information and signals the controller unit of the vehicle's presence and the zone it occupies; it does this 32 times a second.

An alternative use of the X-15 is its "smart highway" application, in which the system detects, or counts, vehicles on a highway and computes the number of vehicles in each lane and their speeds.

Information of this type is important to freeway control engineers when they are required to divert traffic for highway repairs.

The system has additional applications. In airport operations, it can be employed in ground monitoring of runways

and taxiways. It can also be used to monitor train yards, parking lots or any large area where an intruder detection system is needed (cost would preclude its use for small area surveillance, home monitoring, for example). Another potential application is its use to monitor robotic assembly lines.

In the traffic monitoring application, the system acquires several images, processes them simultaneously in less than 30 milliseconds, and transmits the results to the controller computer. The sensor's range of detection is nominally 10 to 200 feet; with optional equipment it can be extended. The system is intended to replace loop-type traffic detectors buried in the road surface; use of the pole-mounted X-15 eliminates the need for cutting the street to install or repair a system. The sensor units weigh less than eight pounds. ●

